

REMARKS

Reconsideration is requested.

Attached is a copy of page 2 of the drawings showing in red the proposed addition of the numeral "17" to Figure 2. It is believed that this obviates the Examiner's objection as set out in Section 2, page 2 of the action. Accordingly, the Examiner's approval of the proposed correction is requested following which the drawing will be formally corrected.

The specification has been amended pursuant to the Examiner's objections in Section 3 of the action. The specification as amended is thought to be clear, concise and exact. Accordingly, entry of the proposed amendments with approval of the amended specification is requested.

The claims have been amended to obviate the Examiner's objections thereto. Claim 12 has been amended to claim a lawn mower with corresponding amendment of the other claims.

The claim changes suggested by the Examiner for antecedent purposes have been made and claims 18, 19 and 21 have been canceled.

The circular plate in claim 12 is the bottom plate, as the Examiner assumed. The claim has been amended to clarify this feature.

References to "or the like" and to the preferred embodiment have been deleted from claims 13 and 16.

Withdrawal of the Section 112, 2nd ¶ rejection of the claims as set out in Section 5 of the action is requested in view of the foregoing claim changes.

New method claims 22 and 23 have been presented for consideration. These claims replace claim 21 and find support throughout the applicants' disclosure.

The Examiner is requested to reconsider the Section 102(b) rejection of claims 12-14, 16-17, 19 and 21 (now claims 12-14 and 16-17) as anticipated by Miller 2,795,916. The reference does not disclose the applicant's invention as defined by these claims, particularly as amended. More specifically, the reference does not disclose a lawn mower with the attachment called for in claim 12.

Miller, at most, relates to an edger rather than a mower. There is, for example, no cutter disk in Miller as the applicant's claims require. The "cutter disk" (80-82) is in fact a rectangular blade (74). See Figure 6 of Miller. Additionally, in applicant's claim 12, the "bottom plate" is in fact the "circular plate". This is clarified in claim 12 as amended.

The Examiner is also requested to reconsider the Section 102(b) rejection of claims 12-14, 17-19 and 21 (now claims 12-14 and 17) as anticipated by Kesling 2,968,903. The reference does not disclose a lawn mower as the applicant's claims require. Kesling relates to a lawn edge trimmer. Furthermore, in Kesling, the cutter disk is a rectangular blade, as in Miller, rather than a circular disk supporting blade.

Reconsideration of the Section 103(a) rejection of claim 15 based on Miller or Kesling and the Section 103(a) rejection of claim 20 based on Kesling in view of Chen is requested. The references do not make the invention of claims 15 and 20 obvious, particularly since the features of claim 12, from which claims 15 and 20 depend, directly or indirectly, are not in any sense obvious from the references. The applicant's invention is directed to a problem which is not of concern to the Examiner's references, i.e. operating a lawn mower, specifically a robotic lawn mower while avoiding small objects, notably golf balls. Nothing in the references would motivate one in the art to combine the presently claimed features called for by the applicant's claims, including claims 15

and 20, to deal with the problem of concern to the applicant. Clearly, for example, it would have not been obvious to adapt a cutting system, as described for an edge trimmer in Kesling or in Miller, to a lawn mower, and particularly to the robotic lawn mower of Chen. In this connection, it is noted that the bottom plate with radial projections of Kesling serves a different purpose, i.e. to lift the "grass to be cut as the trimmer is moved along by the user" (Col. 1, lines 26-28). Clearly, the applicant's mower of claim 15, including the spacing features called for in the context of the mower of claims 12 and 14, is not in any sense obvious from the fundamentally different trimmers of Miller or Kesling.

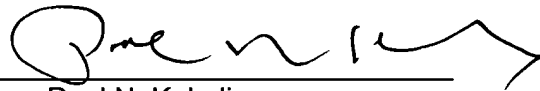
Similarly, the provisions of a robotic lawn mower as called for in claim 20, with the special cutting attachment called for in claim 12, is not obvious from Kesling even if this reference is considered with Chen when there is no motivation to consider the references together. There is extensive prior art regarding cutting systems for non-robotic lawn mowers but, significantly, there is no prior art showing a cutting attachment combining a cutter disk with a pronged disk as claimed by the applicant, for use with a lawn mower, notably a robotic lawn mower as called for in claim 20. Accordingly, claims 15 and 20 should be patentable over the cited references.

New method claims 22 and 23 are thought to be allowable for the same reasons as the other claims herein. There is nothing in the art of record suggesting the applicant's method as defined in claim 22.

The application is thought to be in condition for allowance and such action is requested.

Respectfully submitted,

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APPENDIX
Version with Changes Shown as Marked

IN THE SPECIFICATION

Page 1, beginning at line 7, 3rd ¶, has been amended as follows:

Care of golf "practice courses", where players do their training and practice their "drive", is [not easily taken by] difficult using conventional means. In fact, [practices] practice courses are covered with [a number of] balls [thrown] driven in practice by players and all balls have to be picked up to allow mowing, to prevent [both] balls from being damaged and mowers from being jammed. Further, players have to stop any practice when lawns are mowed, to prevent any injury to the personnel, and this considerably limits the use of the practice course.

Page 2, beginning at line 4, has been amended as follows:

[Nevertheless,] While this system has certain advantages, it is not suitable to mow a golf practice course[, since it would itself cause damages to balls. In fact, retractable blades] in view of the damage it causes to balls lying in the grass. Thus, even though the blades are retractable, they can come in contact with balls and cause damage to them. Tests have been done by varying the cutting height, but balls remain a little suspended over the grass, as a function of the height and density of the lawn. As a result, even when mowing at a height above the diameter of balls, the latter are damaged.

Therefore, there exists a definite need to develop a cutting attachment for lawn mowers for mowing golf courses in the presence of golf balls[, which]. It is particularly [adapted to] desirable to provide such an attachment for automatic or robotic mowing of practice courses [with no human intervention, and possibly] so that it may even be possible to allow [allows] players to continue their practice while mowing.

To this end, this invention [suggests] proposes an improvement to a robotic lawn mower, e.g. the one described in patent application no. PCT/BE98/00038, consisting of a cutting attachment which allows mowing in the presence of hard, small-sized objects, [as compared to the cutting attachment, more] particularly [in the presence of] golf balls, without damaging them.

According to the invention, the freely rotating disk or plate proposed in the above application is provided with extensions, or "prongs", which extend radially from its periphery so that balls or other equivalent objects may be maintained out of the reach of the retractable blades, while allowing the latter to reach and cut the grass [like in prior art]. The system for suspending the cutting attachments allows the latter to be lifted. When the robotic lawn mower passes, the balls beneath the freely rotating disk are not touched by the blades. Friction is also reduced as compared to the fixed disk application, since the forward movement of the machine is coupled to the rotation of the disk in contact with the ball.

Page 3, beginning at line 12, has been amended as follows:

To this end, it [shall be] is noted that the addition of peripheral prongs to a [not] non-freely rotating disk [involves] results in a specific undesirable obstruction [before the disk. This obstruction is] caused by the collection of grass blades of variable length by the prongs as the machine advances. [Thanks to the free rotation proposed according] This problem is avoided by making the disk carrying the peripheral prongs freely rotating. According to one of the variants of the invention, the forwardly directed prongs are directed backwards after a half-turn, and the friction with the lawn grass causes said grass to be released and the pronged disk to be cleaned.

This change to the disk as compared to prior art also increases cutting system safety. When in contact with a living being or an object to be protected, the modified disk will prevent or strongly reduce any direct contact with the blades. Therefore, the device according to the invention [might] may also be advantageously used in non robotic cutting devices (bush-cutters, mowers).

Page 5, beginning at line 12, has been amended as follows:

In Fig. 1 the bottom circular plate, which is freely [rotating] rotatable about the cutting axis 6, is [recognizable] shown. The cutter disk 2 is situated above the plate 3, and is driven by the motor, parallel to the plate. The cutter disk has three blades 1 at its periphery, which extend radially and can pivot freely about an axis of rotation 4 and retract thereafter beneath the cutter disk under the effect of [an] excessive resistance. The bottom plate 3 (freely rotating protective disk) is provided with regular, coplanar

extensions 33 at its periphery. These extensions are in the form of rounded prongs extending beyond the zone [that] which the [extracted] blades 1 can reach by [the] centrifugal force [due to the rotation of] when the cutter disk is rotated. The distance between two radial ends of the extensions is smaller than the size of [the] objects which might be encountered when mowing, in this case [of], golf balls. Balls are kept out of the reach of the free blades 1 between two adjacent extensions. When the grass is cut, balls are not touched by the blades.

IN THE CLAIMS

Claims 18, 19 and 21 are being canceled without prejudice.

The claims are amended as follows::

12. (Amended) A lawn mower having a chassis and a cutting attachment [for a mowing machine, particularly for a lawn mower,] linked to [the] said chassis [of said machine], said cutting attachment comprising a motor [whereof the] with a driving shaft [is] linked to a cutter disk perpendicular to said shaft and provided at its periphery with at least one blade, and a bottom plate substantially parallel to, and located beneath the cutter disk, wherein the periphery of the bottom plate has substantially coplanar extensions, extending radially beyond [the] a zone reachable by the blades and wherein [the circular] said bottom plate is circular and has a size, excluding the extensions, which is substantially equal to or smaller than the size of the cutter disk excluding the blades, said extensions functioning to maintain objects which are in the lawn being mowed outside the reach of said blades, while allowing the blades to mow.

13. (Amended) A [cutting attachment] lawn mower as claimed in claim 12 wherein the bottom plate is mounted freely on [the] a ^{3>}pin of the cutter disk via a roller bearing ^{2~}[or the like].

14. (Amended) A [cutting attachment] lawn mower as claimed in claim 12 wherein the extensions are provided in the form of prongs having a rounded profile made of hollows and tips. ^{←'5'1}

15. (Amended) A [cutting attachment] lawn mower as claimed in claim 14, wherein the distance between two tips or ends of adjacent extensions ranges from 2 cm to 5 cm.

16. (Amended) A [cutting attachment] lawn mower as claimed in claim 12, wherein the number of extensions ranges from 10 to 60[, preferably from 20 to 40].

[17. (Amended) A [cutting attachment] lawn mower as claimed in claim 12
linked to the chassis via a suspension system.]

20. (Amended) A mower as claimed in claim [19] 12 characterized in that it is a robotic lawnmower.

New claims 22 and 23 are being added.